AUTOMOBILE DISPLAY SYSTEM

FIELD OF THE INVENTION

[0001] The present invention relates to a vehicle display lift and more particularly to a display lift which elevates and rotates a vehicle for display purposes. The invention also relates to a vehicle rotator that is used as a component of the lift and rotator.

BACKGROUND

[0002] A vehicle lift used for display purposes is disclosed in United States patent 5,015,146. The lift disclosed in that patent has a fixed column carrying a cantilever support for a vehicle. The vehicle may be mounted on the cantilever support, lifted and tilted for display purposes. This is in the nature of a fixed signage display.

[0003] The present invention proposes a dynamic vehicle display lift with which a vehicle is raised and rotated for display purposes.

SUMMARY

[0004] According to one aspect of the present invention there is provided a vehicle display lift and rotator comprising:

a base;

a platform;

a bearing between the base and the platform, mounting the platform on the base for rotation about an upright rotator axis;

a rotator drive for rotating the platform on the base; and

a base mounting column mounting the base on the ground, the column including a lift member for varying the height of the column between a lower position with the platform substantially at ground level and a raised position with the platform positioned above ground level.

[0005] With the column lowered, the unit does not project above ground level. A vehicle may be driven onto the platform, tied down as necessary, lifted to the raised

position and rotated for display purposes. This provides a simple drive on-drive off display that is visually very effective, easy to use and unobtrusive when not in use.

[0006] In preferred embodiments, the platform may be tilted on the base, to provide a view of the vehicle in an inclined orientation.

[0007] The column lift is preferably an hydraulic cylinder inside a telescoping vertical column. The rotator is preferably electric.

[0008] According to another aspect of the present invention there is provided a vehicle rotator comprising:

a base having annular first bearing race on a top side thereof;

a mount for mounting the base on the ground;

a platform mounted on the base for rotation about an upright axis and having a second annular bearing race on the bottom side thereof;

an annular array of rolling bearings mounted between the first and second bearing races for supporting the platform on the base; and

tracks on the platform for supporting a vehicle.

[0009] This rotator may be used in any application where it is desired to reorient the vehicle, as in a driveway or garage where the vehicle is driven in forwardly and rotated to be driven out, again forwardly.

[00010] A detailed description of the currently preferred embodiment of the invention is given in the following. It is to be understood, however, that the invention is not be construed as limited to that embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

[00011] In the accompanying drawings, which illustrate an exemplary embodiment of the present invention:

Figure 1 is a side elevation of the lift, showing the in ground portion of the column set in to the ground;

Figure 2 is a plan view of the lift;

Figure 3 is a detail cross-sectional elevation of the base and platform assembly along line 3-3 of Figure 2;

Figure 4 is a cross-section along line 4-4 of Figure 3;

Figure 5 is a plan view of the bearing roller assembly;

Figure 6 is a sectional view along line 6-6 of Figure 3 showing the platform in a horizontal orientation; and

Figure 7 is a sectional view along line 6-6 of Figure 3 showing the platform in a tilted orientation.

DETAILED DESCRIPTION

[00012] Referring to the accompanying drawings, there is illustrated a lift 10 mounted in the ground 12. The mount is a column 14 projecting upwardly from the ground surface 16.

[00013] The column 14 includes an outer tube 17 embedded in the ground and an inner tube 18 that slides vertically in the outer tube. Both tubes are of generally square cross section, which prevents their relative rotation. A bushing 20 is mounted on the inner tube near its bottom end. A second bearing and seal 22 is mounted on the upper end of the tube 17. The two bushings support the inner tube for vertical sliding movement. The inner tube has a closed bottom end 23. The movement of the inner tube in the outer tube is controlled with an hydraulic cylinder 24. The cylinder is mounted in the inner tube and has a rod 28 projecting from the closed bottom 23 to the bottom of the outer tube 17.

[00014] A rotator 29 is mounted on top of the inner tube 18. The rotator has a base 30, which includes a disk 31 mounted centrally across the top of the inner tube. The disk is supported on the tube by a downwardly tapering four sided housing 34.

[00015] A large annular bearing 36 is supported on top of the disk 31. This bearing includes a carrier plate 38 that is rotatable about a vertical rotator axis 40. It carries an annular array of rollers 42 that roll on the base, which serves as a lower race of the bearing. The rotator also has a platform 44, which includes a disk 46, concentric with the base disk 31 and the carrier plate 38. The disk 46 serves as the upper race of the bearing A peripheral flange 48 projects downwardly from the edge of the platform disk, over the periphery of the base disk.

[00016] An hydraulic power unit 50 is mounted inside the inner tube 18. This includes a reservoir 52 for hydraulic fluid and a pump 54 and pump drive 56. This

supplies the hydraulic fluid for operating the hydraulic cylinder 24.

[00017] An axle 58 connects the base disk 31 and the platform disk 46 on the vertical axis 40.

[00018] A rotator drive 59 includes an electric motor 60 mounted on the bottom of the base. The motor 60 drives a gear box 62 which in turn drives a pneumatic tire 64 engaging the inner surface of the peripheral flange 48 of the platform. The operation of this motor 60 rotates the platform 44 on the base 30 and the column 14. The tire provides a degree of cushioning in the drive to provide a relatively gentle start and stop for the platform rotation.

[00019] Power for operating the rotor drive and the hydraulic power unit is supplied through an underground electric cable 65 that runs up the inside of the column 14. At the top of the inner tube 18, the cable runs over a slack adjuster 66, which includes an idler 67 fixed to the inner tube and a floating, weighted idler 68.

[00020] The platform 44 includes an assembly 70 of two spaced apart tracks for supporting a vehicle on the platform. The assembly includes two base beams 70 joined by a pair of cross members 72. The tracks 74 are each composed of a tube 76 mounted on the base beams by a hinge 78 with a longitudinal hinge axis 80. The tubes 76 are connected by two cross members 82. Each carries two wheel pad units 84 for supporting a ground wheel of a vehicle. Each of the wheel pad units includes a wheel pad 84 mounted on an inner tube 86 that slides into an end of one of the tubes 76 to adjust the spacing between the wheel pads or to accommodate vehicles with different wheel bases. The cross members 82 may also be adjustable to accept vehicles with different track widths.

[00021] To adjust the lateral tilt of the tracks on the base, the beams 70 have respective sets of apertures 92 to accommodate pins 94 for supporting the tracks 74 at selected inclined positions as shown in Figure 7. Stop plates 96 are mounted on the cross members 72 to limit the downward pivotal movement of the tracks 74.

[00022] While one embodiment of the present invention has been described in the foregoing, it is to be understood that other embodiments are possible within the scope of the invention. As discussed in the foregoing, it is possible to use the rotor as a stand-alone component where elevation of the vehicle for high visibility is not

necessary. The invention is therefore to be considered limited solely by the scope of the appended claims.